

Montana Common Core Standards for Mathematics Professional Learning Guide 2013-2014



opi.mt.gov

This document is intended for online use. All resources and linked websites are embedded in the document.

To access the linked resources, please use this as an online document.

Montana Common Core Standards for Mathematics (MCCSM) 2013-2014 Professional Learning Guide

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Introduction

The Montana Office of Public Instruction (OPI) has created this Guide to link educators and educational leaders to print and audio-visual resources, presenters and workshops, and school-based opportunities that support statewide implementation of Montana’s Common Core Standards for Mathematics (MCCSM). The materials, programs, and providers included in this Guide share a common vision, purpose, and rationale regarding MCCSM implementation.

The Vision for mathematics: All mathematics teachers will be prepared and receive the support they need to provide every student access to the Montana Common Core Standards for Mathematics (MCCSM) through high quality mathematics instruction aligned with the mathematical practices and content standards.

The Purpose of this Guide: Initiate and sustain a statewide system of aligned resources to support all school districts in their preparation of educators to implement the MCCSM. This includes building system-wide capacity for sustained professional learning that can support MCCSM implementation.

There is a sense of urgency around implementation of the Common Core State Standards for Mathematics. Consequently schools, districts and states may be looking for the “quick fix” in professional development or learning. School improvement, and in particular reform in mathematics teaching and learning, is not a “quick” process. Research shows that a significant number of hours over time are needed. Studies suggest that a minimum of 80 hours of professional development is needed to change teacher practice¹ and 160 hours is needed to change classroom culture.² Any professional learning opportunity supporting implementation of the Common Core State Standards for Mathematics should be aligned in scope and focus with the Standards in their entirety. This requires time and multiple forms of professional development.

CCSSO State Consortium for Assessment and Student Success - Mathematics Working Group – Fall 2012 (see Appendix B)

The rationale stated above validates the stance Montana has taken toward MCCSM professional development and informs the choices of professional learning opportunities laid out in this Guide.

The Guide offers tools for an established systems approach to professional development (i.e., one that is supported by professional learning communities and consistent staff meetings). It can be used by schools and districts to plan a clear path for implementing the MCCSM through communication, collaboration, and capacity building while ensuring efficiency, excellence and equity.



¹ Merck Institute for Science Education

² Supovitz and Turner (2000), National Science Foundation’s Local Systemic Change Initiative
Denise Juneau, Superintendent • Montana Office of Public Instruction • www.opi.mt.gov

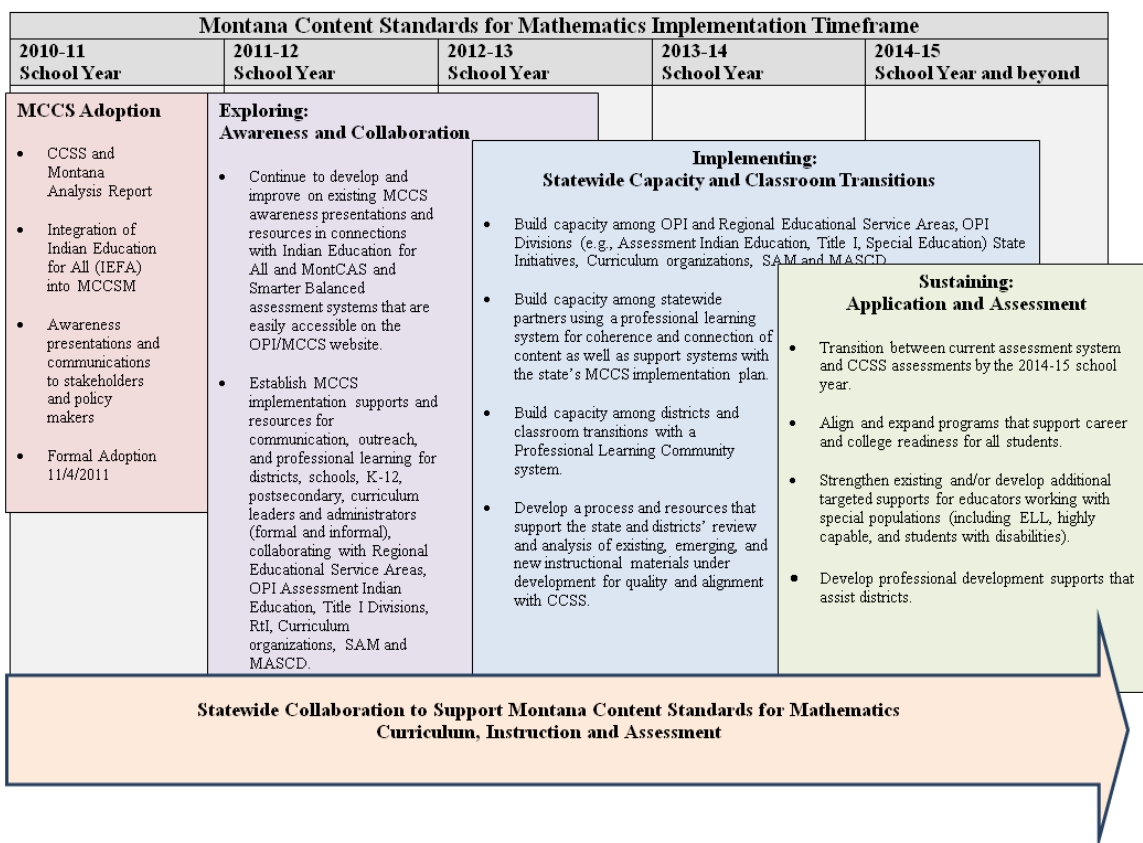
Three-Phase Implementation Process

The Office of Public Instruction subscribes to a three-phase MCCSM implementation process. Teachers, administrators, and schools begin by collaboratively **Exploring** the content and purpose of the MCCSM. At both the individual and systemic level they move through multiple stages of **Implementing** the standards through curriculum alignment and instructional planning. Success in this phase requires building educator capacity statewide with ongoing and high-quality professional learning. **Sustaining** changes is an ongoing focus as educators work through the challenges of classroom transitions and as MCCSM-focused assessments are introduced. The diagram below outlines key steps and related issues at each phase of the process.

Foundational Components for Implementing Montana Common Core Standards for Mathematics		
In this Phase:	Classroom Teachers will Need...	District and Building Administrators, Coaches, and Teacher Leaders will Need...
Exploring	<ol style="list-style-type: none"> 1) Understanding of the MCCSM standards including the major shifts and differences between the old and new standards within their subject and grade levels 2) Time and support within professional learning communities to plan and consider impact at the classroom level 	<ol style="list-style-type: none"> 1) Understanding of the MCCSM standards including the major shifts and differences between the old and new standards 2) To conduct analyses of alignment and gaps within district/building instructional materials and district/building level assessments
Implementing	<ol style="list-style-type: none"> 1) Collaborative time to dig into the MCCSM document more deeply in order to understand key content and vertical articulation of ideas 2) Collaborative time to develop instructional skills to implement the standards 3) Collaborative time to understand alignment and gaps between the MCCSM and classroom units and lessons 	<ol style="list-style-type: none"> 1) An implementation and communication plan for transitioning between old and new standards that integrates with existing district/building priorities, school improvement efforts, and educator evaluation processes 2) To identify teacher leaders to develop and lead district/building professional learning 3) To provide professional learning time for all teachers to implement the standards
Sustaining	<ol style="list-style-type: none"> 1) Aligned materials and instructional supports, as well as classroom-based assessments 2) Understanding of the gaps in their own knowledge and skills to further inform professional learning needs 3) Knowledge and ability to use data from the new assessment system 	<ol style="list-style-type: none"> 1) Knowledge and ability to implement a new assessment system, including a thorough understanding of the system. Its components and available resources 2) Resources for teachers including instructional supports and aligned classroom-based assessments 3) Understanding of the gaps in teacher knowledge and skills to further inform professional learning needs

Implementation Time Frame

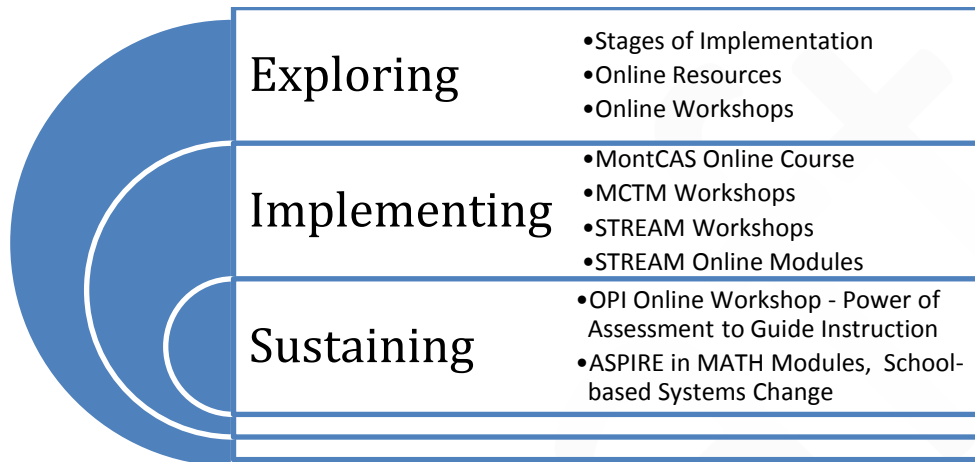
The three-phase implementation process is structured to continue into 2015 and beyond as shown in the timeframe below. Of course, within this continuum are repeated cycles of Exploring, Implementing, and Sustaining as new elements of MCCSM implementation are introduced. Although often represented by a linear timeline, standards implementation is actually a complex process composed of many interlocking and overlapping cycles. This is why ongoing and systemic professional learning is a necessary partner in the process.



Many districts have moved beyond Exploring the MCCSM and are at various stages of the Implementing phase. Recognizing each district's unique knowledge base, timeline, and priorities means that professional learning for standards implementation must be ongoing, long-range, and adaptable. Professional learning opportunities will continually be developed for students, teachers, school leaders, and communities to support specific school districts' implementation plans. To meet the diverse needs of our schools, the Office of Public Instruction is committed to creating, identifying, recommending, and funding high-quality professional learning opportunities. This Guide is an effort to compile those resources to be accessible to all Montana educators. As a package, these resources offer a flexible approach to professional learning with opportunities that vary in length, size of intended audience, and form of delivery (e.g., face-to-face workshops, school-based studies, and online courses). What they share is a focus on Montana's teachers and a common vision and purpose for improving Montana mathematics via the MCCSM.

2013-2014 Montana MCCSM Professional Learning Schedule

The following schedule lists specific “Montana Made” professional learning opportunities as well as more general resources for implementing Montana’s Content Standards for Mathematics. Detailed information for each learning opportunity is located in Appendix A. The schedule and the descriptions that follow are interactive, with live links to resources when used in electronic form. The schedule is also dynamic; opportunities may change in response to the professional development need of the audience (e.g., dates and times, size of groups, location).



Phase of Implementation	Level	MCCSM Opportunity	Description of Professional Learning Opportunity	Provider (Appendix B)	Time Frame
Exploring	K-12	On Demand	Brief sessions designed for a school or specific group (e.g., Education Cooperative, school PIR days).	Math Lead Team	Upon request
Exploring Implementing	K-12	Stages of Implementation Appendix A1 Appendix A2	A comprehensive resource for school districts to self-assess readiness, create action plans, and access targeted resources and processes for aligning curriculum, instruction and assessment.	OPI Website facilitated through district/school	Ongoing
Implementing	K-12	MCCSM: Standards for Mathematical Practice Appendix A4	An online course to increase understanding of the MCCSM and to help participants become skillful users and facilitators of the Standards for Mathematical Practice in their classrooms.	“MontCAS Presents” OPI Online Course	Summer 2013
Implementing	K-5	Mathematical Practices and Content Appendix A5	A two-day workshop to provide teachers with an understanding of all eight MCCSM Mathematical Practices and what these practices look like in the mathematics classroom.	MCTM Academy	Grades K-5 April 9-10, Miles City Grades K-5 August 7-8, Billings

Phase of Implementation	Level	MCCSM Opportunity	Description of Professional Learning Opportunity	Provider (Appendix B)	Time Frame
Implementing	6-12	Mathematical Practices and Content Appendix A5	A two-day workshop to provide teachers with an understanding of all eight MCCSM Mathematical Practices and what these practices look like in the mathematics classroom.	MCTM Academy	Grades 6-12 April 3-4, Miles City Grades 6-12 August 5-6, Billings
Implementing	4-7	STREAM Workshops Appendix A6	Workshops to increase teacher knowledge of Mathematical Practices and STEM; Number Systems and Operations; Fractions, Ratios, and Proportions; and Teacher Learning and Leadership.	Jennie Luebeck, Director Lisa Scott, Program Manager	TBD 2013
Implementing	4-7	STREAM Online Courses Appendix A6	Three-week online modules to increase teacher knowledge of Mathematical Practices and STEM; Number Systems and Operations; Fractions, Ratios, and Proportions; and Teacher Learning and Leadership.	Jennie Luebeck, Director Lisa Scott, Project Manager	Fall 2013 (potential for 2 graduate credits MSU Extended University)
Implementing	K-12	On Demand	Customized professional learning	Consultants	On Request
Sustaining	K-5	The Power of Assessment to Guide Instruction Appendix A3	A process to examine Smarter Balanced Assessment items to identify appropriate Grade K-5 instructional strategies.	OPI VisionNet Workshop	April 2013 Recorded for ongoing use
Sustaining	6-12	The Power of Assessment to Guide Instruction Appendix A3	A process to examine Smarter Balanced Assessment items to identify appropriate Grade 6-12 instructional strategies.	OPI VisionNet Workshop	March 2013 (on site) Recorded for ongoing use
Sustaining	K-5	Launch of ASPIRE in Math, School-Based Professional Learning Appendix A7	Launch workshop for ASPIRE in MATH modules for yearlong school-based professional learning facilitated by a MCCSM Mathematics Coach.	MBI Institute	June 18, 2013 Bozeman
Sustaining	6-12	Launch of ASPIRE in Math, School-Based Professional Learning Appendix A7	Launch workshop for ASPIRE in MATH modules for yearlong school-based professional learning facilitated by a MCCSM Mathematics Coach.	MBI Institute	June 20, 2013 Bozeman
Sustaining	K-12	ASPIRE in Math, School-Based Professional Learning Appendix A7	Ongoing work with ASPIRE in MATH modules for yearlong school-based professional learning facilitated by a MCCSM Mathematics Coach.	RESAs MCCS Math Coaches	School year 2013-14
Sustaining	4-7	STREAM Online Courses & Workshops Appendix A6	Three-week modules and three-hour workshops to help teachers embed Mathematical Practices and content in everyday instruction. Modules in progress: Modeling, Geometry, Algebraic Thinking.	Jennie Luebeck, Director Lisa Scott, Project Manager	School year 2013-14
More opportunities to come – keep checking for an updated schedule!					

Appendix A

“Montana Made” Professional Learning Opportunities for the Montana Content Standards in Mathematics

A1: MCCSM Stages of Implementation Continuum

	Explore			Implement		Sustain
Stages	Stage 1 Understand MCCS	Stage 2 Align Curriculum and Instruction	Stage 3 Align Student Progress Measures	Stage 4 Implement in classrooms	Stage 5 Implement in schools and districts	Stage 6 Evaluate Assessment Data to make school- wide systematic changes
CCR	All Students Graduate College and Career Ready					
Descriptors	The Montana Common Core Standards for each grade and subject area have been thoroughly studied and are understood.	District Curriculum has been revised or created that aligns with the MCCS at each grade level and provides a common sequencing to facilitate teacher collaboration at the school level. Educators have identified instructional materials that are coherent, consistent, and comprehensive and support effective learning of the ELA, literacy and Mathematics standards.	Educators establish measurable conceptual learning progressions and how students' understandings of ideas develop, evolve, and progress to establish measurable goals. Student assessments have been identified to measure the established goals. A foundation of understanding for formative assessment is established.	Educators design, adapt and use evidence-based best practices and guides to support effective deliver of the curriculum and assessment progress measures to support learning for all students through focused, coherent, and rigorous instruction.	Throughout the school year teachers engage in horizontal (e.g., grade level) and vertical (e.g., cross-grade level) conversations to be sure that every student has multiple learning opportunities and experiences to master standards required for student success at the next grade level.	Educators evaluate data collected from interim and summative assessments. Processes are established to make systematic changes based on data results.

The [Montana Content Standards Stages of Implementation Continuum](#) is a comprehensive resource for school districts to self-assess readiness, create action plans, and access targeted resources and processes for aligning curriculum, instruction and assessment. The suggested procedures and listed resources found in the **Procedures and Resources Sections** are outlined to complete the steps for each stage as indicated in the Self-Assessment form. In order to meet the needs of each district, the suggested procedures should be part of an established systems approach (e.g., one that supports professional learning communities and consistent staff meetings). Each stage for mathematics includes a purpose statement and descriptor for leaders and teachers to identify their level of proficiency for that stage of implementing the Montana Common Core Standards for Mathematics.

The resources included in the Stages of Implementation are a combination of original OPI resources, adapted open-source materials, and other high-quality documents. Please take time to view all the resources laid out as a set of steps that provide a process for implementation.

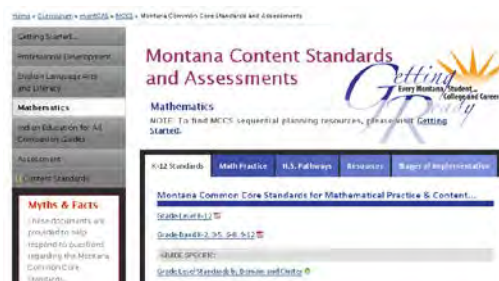
[How to Use the Stages of Implementation for Mathematics Webinar - 16 minutes](#)

A2: Implementation Resources developed by OPI

The Office of Public Instruction has developed a wide array of targeted print and audio-visual materials to support awareness and implementation of MCCSM. Many of these resources are listed and linked below. Most of them can also be found at “Getting Ready,” OPI’s dedicated Web site for information about standards and assessments.

Find out more at:

<http://opi.mt.gov/Curriculum/montCAS/MCCS/index.php>



OPI Resources for Understanding MCCSM

Webinar: [Updated Getting Ready-Webinar, April 2012](#) (27 minutes, (OPI) and [Getting Ready-PowerPoint](#). Guiding questions to facilitate the discussion are included in the [Math Facilitate a Staff Meeting](#) document.

Treasure Hunt: [K-12 and Grade Specific Mathematics MCCS documents](#). Read and study the [MCCS using the Treasure Hunt](#) and [Treasure Hunt Answer Key](#)

Webinar: [Mathematical Practices: Highlights Webinar, Spring 2012](#) (25 minutes, OPI). This site contains the Webinar, [PowerPoint](#), and resources and related links.

Webinar: [Mathematics Focus and Coherence: Critical Areas and Progressions Highlights Webinar, Spring 2012](#) (34 minutes, OPI). This site contains the Webinar, [PowerPoint](#), resources and related links.

Workshop: [Mathematical Practices Workshop - PowerPoint](#), [Facilitator's Guide](#), [Distance-Time Activity](#), [Reference for Distance-Time](#) and [Reflection](#) materials. This three+ hour OPI workshop from 2011 can be organized several ways: hour sessions, half-day, or all day.

Workshop: [Mathematics Focus and Coherence: Critical Areas and Progressions Workshop, winter 2011 PowerPoint](#), [Facilitator's Guide](#), [materials](#) and related resources and links are suggested. This three+ hour OPI workshop can be organized several ways: hour sessions, half-day, or all day.

Timeline: [Montana Content Standards Implementation Timeline](#)

Fact Sheets: [Teachers, Parents, Districts, Business, Higher Ed, Legislators Fact Sheets](#)

Descriptors: [MCCS for Mathematical Practice At-A-Glance](#)

Chart: [MCCS Mathematical Practices Grouping Chart](#)

Descriptors: [Math Practices Grade Band Descriptions Excel Document](#)

Charts: [Learning Progressions by Domain and Clusters](#)

Mathematical Practices: [Grade 6 Math Practices Posters](#)

A2: Implementation Resources developed by OPI (continued)

OPI Resources for MCCSM Curriculum and Instruction

Planning: [Montana Planning Process: K-8 Critical Areas Lead to Coherent Curriculum](#)

Workshop: [Mathematics Focus and Coherence: Critical Areas and Progressions Workshop, Winter 2011](#) This three+ hour workshop includes PowerPoint, Facilitator's Guide, materials, and suggested related resources and links. The workshop can be organized as hour sessions, half-day, or all day.

Guide: [Montana Guide to Curriculum Development](#)

Curriculum: [Montana Grade Level Curriculum Organizers](#)

Webinar: [Navigating the Illustrative Mathematics Website](#)

Toolkit: [Montana Instructional Materials Toolkit](#)

A3: VisionNet Workshop: The Power of Assessment to Guide Instruction

A repeat of the 2013 OPI Assessment Conference pre-sessions will be held for all educators from across the state to participate via VisionNet. The [VisionNet for Educators](#)' workshops will be recorded and available for future use by state professional development providers and individual schools.



Participants will become familiar with Smarter Balanced sample items and scoring rubrics by examining resources and completing tasks. They will identify the mathematics content and Mathematical Practices required in the items and discuss appropriate instructional strategies to encourage student proficiency.

A4: "MontCAS Presents" MCCSM Online Course

MCCSM: Standards for Mathematical Practice

[Fall 2012 Course Syllabus](#)

The purpose of this course is to increase understanding of the Montana Common Core Standards for Mathematics and to help teachers become skillful users and facilitators of the Standards for Mathematical Practice in their classrooms. Participants will focus on the mathematical practices by reviewing Mathematical Practice resources and by closely examining how they are implemented effectively in the classroom.



A5: Montana Council of Teachers of Mathematics Professional Development Academy



<http://montanamath.org/>

The Montana Council of Teachers of Mathematics (MCTM) is pleased to offer a two-day workshop designed to help teachers implement the Standards for Mathematical Practice found in the MCCSM. The Standards for Mathematical Practice describe habits of mind and mathematical expertise that educators at all levels should seek to develop in their students. The MCTM workshops focus on mathematical practices for all grade levels. Students are expected to:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Teachers attending the workshop will leave with an understanding of all eight practices and what these practices look like in the mathematics classroom.

The presenters for the workshops are all experienced mathematics educators from Montana.

Fee Structure:

- Each 2 day workshop is for up to 40 teachers in either grades K-5 or 6-12
- \$2,000 per 2 day workshop + travel, lodging, per diem, and substitute costs for the presenter

We at MCTM are proud to offer high quality professional development to teachers across Montana. If you have questions or would like to schedule a presentation for your region, consortium, or district, please contact Hilary Risser (hrisser@mtech.edu).

A6: STREAM: Standards-based Teaching Renewing Educators Across Montana



STREAM is an OPI-funded Mathematics and Science Partnership with the goal of helping middle grades teachers bring the standards to life in Montana's mathematics classrooms. Professional learning materials include a growing catalog of 3-hour workshop sessions that can be delivered as stand-alone events or combined into one- or two-day events. Also available is a set of related online modules that teachers can complete individually or as a learning team. These can also be provided in stand-alone or combined format, and may be available as a course for graduate credit. New sessions continue to be developed for significant MCCSM content themes and will be added to this site as they are completed.

Theme 1 - Mathematical Practices and STEM Connections

Learn how to embed Mathematical Practices in everyday instruction, how to assess students' use of Mathematical Practices, and how the practice of modeling provides a natural connection to science, technology, and engineering.

Theme 2 - Grades 4-7 Learning Progression: Number Systems and Operations

Learn how content progresses and unfolds across clusters, domains, and grade levels and study the development of number concepts through operations, properties, and systems.

Theme 3 - Grades 4-7 Learning Progression: Fraction-Ratio-Proportion

Learn how content progresses and unfolds across clusters, domains, and grade levels and trace the development of proportional reasoning to its conceptual roots in fraction and ratio.

Theme 4 - Teacher Learning and Leadership: Facilitating PLCs and Modeling Instruction

Equip yourself with skills and strategies for sharing instructional practice, modeling standards-based instruction, and facilitating school-based collaborative teacher learning.

Themes under development:

- Modeling as a tool for integrated STEM learning
- Grades 4-7 Learning Progressions in Geometry and Algebraic Thinking

Features of Online Modules:

- Each module lasts three weeks with an estimated workload of 4 to 6 hours per week
- Assignments include readings, videos, reflections, discussions, and lesson tasks
- Modules are asynchronous and moderated by a knowledgeable instructor/facilitator

Fee Structure:

- \$500 per 3-hour session + travel, lodging, per diem, and substitute costs (includes consultation to adapt presentation to district needs and audience)
- Fees for online modules vary depending on mode of delivery

Click [here](#) for a SHORT overview of the STREAM project (5 to 6 minutes):

Click [here](#) for a LONG overview of the STREAM project (15 to 16 minutes)

A7: ASPIRE in MATH: Achieving Standards: Professional In-School Resources for Educators in Math

The mission of ASPIRE in MATH is to provide long term support to schools and districts in creating self-sustaining local learning communities whose vision is to implement the Montana Common Core Standards for Mathematics (MCCSM). This yearlong professional learning program consists of seven modules founded on “essential practices” for transforming schools through mathematics. It is anticipated that participating schools or districts will commit the necessary time for participants (teachers, math leaders and administrators) to engage in consistent collaborative work designed to implement the MCCSM curriculum, instructional practices, and assessment, and to do so with intention. “Intentionality is believing with all your being that your students can be successful at math and that you *will* find a way to make that happen.”

Confer, C. & Ramirez, M. (2012). *Small Steps, Big Change: Eight Essential Practices for Transforming Schools through Mathematics*. Portland, Maine: Stenhouse. (Quote from p. 130)

Click [here](#) for a SHORT overview of ASPIRE in Math (8 minutes)

Keep the End in Mind

This module clarifies what mathematical proficiency means for students, teachers and administrators.

- Students must be able to:
 - think and reason effectively.
 - solve problems accurately, flexibly, and efficiently.
 - communicate clearly using mathematical language and representations.
 - demonstrate their knowledge and skills on performance assessments as well as standardized tests.
- Teachers must be able to:
 - balance concepts and skills.
 - focus on high quality student work.
 - understand and build on the pathways that students frequently take in understanding a concept.
 - assess where students are on the pathway.
 - differentiate instruction and interventions accordingly.
- Administrators must be able to:
 - organize professional learning to meet teacher content and pedagogical needs.
 - understand the standards.
 - promote a balanced assessment plan.
 - provide the time for teachers to collaborate.

Community of Learners

This module builds a community of learners who collaborate with the intent of making sure all students are mathematically proficient and career and college ready.

Understanding the Problem

This module develops a thorough knowledge and understanding of focus, coherence, and rigor found in the MCCSM practices, content standards, and progressions.

The 80/20 Rule

This module engages participants in analyzing where they are now, identifying priorities, setting goals, and establishing a plan that outlines where 80% of energy and resources will be placed and how the other 20% will be used based on "keeping the end in mind."

Patterns in Content, Instruction and Assessment

This module focuses on teacher understanding and construction of "knowledge packages" (concepts, skills, representations, strategies, language, pedagogy, and assessments) based on critical areas and learning progressions in the standards.

The Stance of a Researcher

This module focuses on supporting teachers in deprivatizing their practice through a research stance.

- This may include:
 - common planning
 - peer-coaching
 - coaching
 - co-teaching
 - informal lesson study
 - analyzing student work

Sustainability

This module emphasizes designing the cyclical process that ensures a sustainable mathematics learning community.

- This may include:
 - a written plan
 - mission, vision, goals and objectives
 - change in staff
 - data driven decision making

Contact [Jean Howard](#), OPI Mathematics Instructional Coordinator, jhoward@mt.gov

Appendix B

Professional Learning Providers Contact Information

Office of Public Instruction

Jean Howard, Mathematics Instructional Coordinator, (406)-444-0706

Email: jhoward@mt.gov Website:

<http://opi.mt.gov/MontanaCommonCoreStandards>



Montana
Office of Public Instruction
Denise Juneau, State Superintendent

Mathematics Lead Team

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Lisa Scott

E-mail: lisa.scott@mathedconsulting.org

Pat Baltzley

E-mail: patcreel1@gmail.com

Regional Education Service Areas

PESA – Prairie Educational Service Area

Kim Stanton, Director (406) 853-1908

Email: pesa@midrivers.com Web Site: www.mt-pesa.org

MNCSR – Montana North Central Educational Services Region

Gaye Genereux, Director (406) 378-3136

Email: gayegenereux@yahoo.com Web Site: www.mncsr.org

MRESA3 – Montana Regional Education Service Area 3

Marsha Sampson, Director (406) 657-2085

Email: msampson@msubillings.edu Web Site: www.msubillings.edu/smart

RESA4U – Regional Education Service Area 4 You

Bruce Grubbs, Executive Director (406) 672-1549

Email: bruce.g.resa4u@gmail.com Web Site: www.resa4u.org

WM-CSPD – Western Montana – Comprehensive System of Personnel Development

Nancy Marks, WM-CSPD Coordinator (406) 728-2400 Ext 1088

Email: nancymarks@wmcspd.org Web Site: www.wmcspd.org



Montana Comprehensive System of Personnel Development (CSPD)

Region I – Karen Pickart, Coordinator (406) 377-6489

Email: cspd.ri@gmail.com Web Site: <http://cspdregioni.com/>

Region II – Aileen Couch, Coordinator (406) 265-4356

Email: cspd@havre.k12.mt.us Web Site: <http://www.havre.k12.mt.us/page/332>

Region III – Debra Miller, Coordinator (406) 657-2072

Email: dmiller@msubillings.edu Web Site: <http://www.msubillings.edu/smart/cspd.htm>

Region IV – Denielle M. Miller, Coordinator (406) 930-6628

Email: dmiller@bridgeband.com Web Site: <http://opi.mt.gov/Programs/CSPD/RegionIV/index.html>

Region V – Nancy Marks, Coordinator (406) 728-2400 Ext 1088

Email: nancymarks@wmcspd.org Web Site: www.wmcspd.org

Montana Council of Teachers of Mathematics (MCTM)

Hilary Risser, Board of Directors

E-mail: (hrisser@mttech.edu) Website: <http://montanamath.org/>

Montana Curriculum Consortiums

Alliance for Curriculum Enhancement (A.C.E)

Andrea Fischer, Director (406)-690-9872

E-mail: afischer.acemt@gmail.com Website <http://mtace.org/>

Golden Triangle Curriculum Cooperative

Diana Knudson, Director (406)-434-2745

E-mail: diana@gtccmt.org Website: <http://gtccmt.org/>

Missoula Area Curriculum Consortium

Dr. Christine Kuschel, Consultant (406)-251-5885

E-mail: CKuschel@hotmail.com Website:

<http://www.co.missoula.mt.us/supschools/MACC/MissoulaAreaCurriculumConsortium.htm>

Montana Educational Consortium

Fred Seidensticker, Director (406)-381-4464

E-mail: freds@nr-es.org Website: <http://mec.nr-es.org/>

Montana Small Schools Alliance

Dan Rask, Director (406)-683-2685

E-mail: drask@metnet.mt.gov Website: <http://mtsmallschools.org/>

Northwest Montana Educational Cooperative

Eliza Sorte-Thomas, Director (406)-752-3302

E-mail: director@nwmtcoop.org Website: <http://nwmteducationalcoop.org/>

Prairie View Curriculum Consortium

Kim Stanton, Curriculum Consultant (406)-853-1908

E-mail: pvcc@midrivers.com

Mathematics and Science Partnership Project, Mathematics

Standards-based Teaching Renewing Educators Across Montana (STREAM)

Jennifer Luebeck, Project Director (406)-994-5341

E-mail: luebeck@math.montana.edu

Lisa Scott, Project Manager (406)-860-7735

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Appendix C

Professional Learning Guidelines

Adapted from CCSSO Mathematics SCASS Work Group – Fall 2012

Meghan Southworth, Maine Dept of Education
 Heather Baker, Indiana Dept of Education
 David Barnes, Kansas State Dept of Education

David Smith, Utah State Office of Education
 Barbara Bissell, North Carolina Dept of Public Instruction
 Stacie Kaichi-Imamura, Hawaii Dept of Education

Professional Learning Progression: Awareness to Readiness to Improvement

Professional growth is an ongoing process. One-time isolated opportunities, in and of themselves, are not effective. Using the more effective “Awareness-Readiness-Improvement” scenario, an informational plenary might be followed by a hands-on workshop session, followed by embedded classroom practice and reflection.

Professional Learning Standards

The organization Learning Forward has developed standards to guide effective professional learning for educators found at <http://www.learningforward.org/standards>. They outline the characteristics of professional learning that lead to effective teaching practices, supportive leadership, and improved student results. They are organized around the following standards:

- Learning Communities
- Resources
- Learning Designs
- Outcomes
- Leadership
- Data
- Implementation

Features of Effective Professional Development

Based on a synthesis of the research³, professional development that is most likely to positively affect teacher instruction is:

- Of considerable duration
- Coherent in terms of teachers’ experiences
- Infused with active learning, rather than a stand-and-deliver model
- Focused on specific content and/or instructional strategies rather than general
- Characterized by collective participation of educators (grade-level or school-level teams)

This group feels the most important components of effective professional development are follow-up, collaboration, and reflection. Activities that are content-focused but do not increase teachers’ pedagogical knowledge and skills have a negative association with teacher practice.⁴

³ Snow-Renner, R. and P. Lauer (2005), *Professional Development Analysis*, McREL Insights.

⁴ Garet, M.S., et al. What Makes Professional Development Effective? Results from a National Sample of Teachers. *American Educational Research Journal*, Vol. 38, No. 4 (Winter, 2001), pp. 915-945.

Designing Professional Development

Effective professional development should be designed to meet the specific needs of its participants. Before designing a professional learning opportunity, one should identify:

1. Audience
 - a. Administrators
 - b. Teachers
 - c. Parents
 - d. State and local boards of education
 - e. Other stakeholders
2. Need
 - a. Awareness
 - b. Readiness
 - c. Continuous improvement
3. Platform for Delivery
 - a. Web-based
 - b. Self-study (such as book study)
 - c. Plenary or informational
 - d. Hands-on workshop session
 - e. Blended (both on-line and face-to-face)
 - f. Classroom-embedded and sustained

What We Know About What Works

1. Meet the Promise of Content Standards: Professional Learning Required by Joellen Killion, <http://www.learningforward.org/docs/pdf/read-the-brief-%28pdf%29.pdf?sfvrsn=0>
2. Does Teacher Professional Development Have Effects on Teaching and Learning? By Rolf Blank, CCSSO. http://www.ccsso.org/Documents/2008/Does_Teacher_Professional_Development_2008.pdf
3. Designing Professional Development for Teachers of Science and Mathematics (3rd Edition) by Susan Loucks-Horsley, et. al, WestEd. <http://www.wested.org/cs/we/view/rs/1005>
4. Meet the Promise of Content Standards: Investing in Professional Learning", by Joellen Killion and Stephanie Hirsch. <http://www.learningforward.org/docs/pdf/meetpromiseinvesting.pdf?sfvrsn=2>
5. Supporting Implementation of the Common Core State Standards for Mathematics: Recommendations for Professional Development by Paola Sztajin, et al, NCSM. http://www.mathedleadership.org/docs/ccss/Summary_CCSS%20Math.pdf
6. Measuring the Effects of Professional Development on Teacher Knowledge: The Case of Developing Mathematical Ideas by Courtney A. Bell, et al, NCTM. <http://www.nctm.org/publications/article.aspx?id=27730>
7. Studying the Effects of Professional Development: The Case of the NSF's Local Systemic Change Through Teacher Enhancement Initiative by Daniel Heck, et al, NCTM. <http://www.nctm.org/publications/article.aspx?id=17346>

Credible Sources for Professional Development Opportunities, Resources, and Materials

1. Council of Chief State School Officers (CCSSO) <http://www.ccsso.org>
2. National Council of Teachers of Mathematics (NCTM) and its affiliates <http://www.nctm.org>
3. National Council of Supervisors of Mathematics (NCSM) <http://www.mathedleadership.org>
4. Association of State Supervisors of Mathematics (ASSM) for State Supervisors eligible for membership <http://www.assm.us>
5. Developing Mathematical Ideas (DMI) <http://www.mathleadership.org>
6. Mathematics in the City (MitC) <http://www.mitccny.org>
7. Association for Supervision and Curriculum Development (ASCD) and its affiliates <http://www.ascd.org/Default.aspx>
8. WestEd <http://www.wested.org/cs/we/print/docs/we/home.htm>
9. Education Development Center, Inc. (EDC) <http://www.edc.org>
10. Student Achievement Partners <http://achievethecore.org>
11. Inside Mathematics <http://www.insidemathematics.org>
12. Illustrative Mathematics Project <http://illustrativemathematics.org>
13. Achieve <http://www.achieve.org/math-works>
14. James B. Hunt, Jr. Institute for Educational Leadership and Policy <http://www.hunt-institute.org>

Publications that Support Professional Development

1. Common Core Mathematics in a PLC at Work, A Leader's Guide by Timothy D. Kanold and Matthew R. Larson (NCTM) <http://www.nctm.org/catalog/product.aspx?id=14386>
2. Using a Publication as a Professional Development Experience: Growing Professionally by Jenny Bay-Williams and Karen Karp (NCTM) http://www.nctm.org/uploadedFiles/Professional_Development/GrowingProfessionally-PDguide.pdf
3. National Council of Teachers of Mathematics (NCTM) Books and Journals <http://www.nctm.org/publications/default.aspx?id=218>
4. Association for Supervision and Curriculum Development (ASCD) Books and Publications <http://www.ascd.org/books-publications.aspx>
5. Elementary and Middle School Mathematics: Teaching Developmentally (8th Edition), John A. Van de Walle <http://www.amazon.com/John-A.-Van-de-Walle/e/B001H6MFCC>
6. Adding It Up, National Academies Press http://www.nap.edu/catalog.php?record_id=9822

2013 Montana Common Core Standards (MCCS) Sessions!

Enjoy a variety of informative sessions to effectively MCCS in your school including...

- Monday, June 17th, 1:00-4:00 p.m.: MCCS Literacy's Hidden Resource: The Content Area Teacher with Colet Bartow and Chris DeWald
- Tuesday, June 18th, 7:30-8:15 a.m.: Montana's Hidden Treasures: Free Instructional Resources for All Montana Teachers with Colet Bartow
- Tuesday, June 18th, 8:30-11:30 a.m.: Embracing Montana Content and Practice Standards: Essential Math Curriculum Instruction and Assessment for **K-5, Part 1** with Karma Nelson, Lisa Scott, Pat Baltzley
- Tuesday, June 18th, 1:00-4:00 p.m.: Embracing Montana Content and Practice Standards: Essential Math Curriculum Instruction and Assessment for **K-5, Part 2** with Karma Nelson, Lisa Scott, Pat Baltzley
- Wednesday, June 19th, 11:45-12:45 p.m.: More Than Making the Grade: Standards-Based Grading and Reporting with Colet Bartow
- Wednesday, June 19th, 1:00-4:00 p.m.: The Power of Assessment to Guide Mathematics Instruction with Karma Nelson, Lisa Scott, Pat Baltzley
- Thursday, June 20th, 7:30-8:15 a.m.: Exceptional Learners and the MCCS: The Art of Engagement within a Framework of Fidelity with Colet Bartow
- Thursday, June 20th, 7:30-8:15 a.m.: Merging Science Instruction with the Common Core: Grade Appropriate Resources that Integrate Science & Literacy in the Elementary Classroom with Chris DeWald and Jennifer Stadum
- Thursday, June 20th, 8:30-11:30 a.m.: Embracing Montana Content and Practice Standards: Essential Math Curriculum Instruction and Assessment for **6-12, Part 1** with Karma Nelson, Lisa Scott, Pat Baltzley
- Thursday, June 20th 1:00-4:00 p.m.: Empowering Student Learning through Technology Integration with Terri Barclay
- Thursday, June 20th 1:00-4:00 p.m.: Embracing Montana Content and Practice Standards: Essential Math Curriculum Instruction and Assessment for **6-12, Part 2** with Karma Nelson, Lisa Scott, Pat Baltzley

Don't Forget!

- Early Bird Sessions: Tuesday-Thursday, 7:30-8:15 a.m.
- Lunch and Learn Sessions: Tuesday-Thursday, 11:45-12:45 p.m.
- Team Time Sessions: Monday-Thursday, 11:45-12:45 p.m.
- Poster Session Appetizer Social: Tuesday, 4:30-6:00 p.m.
- MBI Institute's 6th Annual Golf Tournament: Thursday, 4:30 p.m.—until the last team comes in!

Working together to provide students a safe and engaging learning environment that promotes high school graduation for all!